EMPACT

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PRIMARY DB KEY:	**05-103-10719**	NAME/DESCRIP :	**PICEANCE CREEK UNIT T87X-3G5**
LEASE #:			**PRODUCTION CASING**
FIELD/AREA:			
PROJECT NO. :	**202507027**	ANALYSIS NO. :	**01**
COMPANY NAME :	**QB ENERGY OPERATING, LLC**	ANALYSIS DATE:	JULY 11, 2025 14:38
OFFICE / BRANCH:	PARACHUTE, CO	SAMPLE DATE :	JULY 1, 2025
CUSTOMER REF:		TO:	
PRODUCER :	QB ENERGY OPERATING, LLC	EFFECTIVE DATE:	
FIELD DATA			
SAMPLE CYCLE:		SAMPLE TYPE:	
SAMPLE PRES. :	1260 psig	PROBE :	
FLOW PRES. :	psig	CYLINDER NO. :	ECA-807
LAB PRES:	psig	SAMPLED BY :	NICK CROY
SAMPLE TEMP. :	ºf	SAMPLING COMPANY:	QB ENERGY OPERATING, LLC
AMBIENT TEMP.:	ºf	H2S BY STAIN TUBE:	ppm mol
H2O BY STAIN TUBE:	#/mmcf	CO2 BY STAIN TUBE:	Mol %
FIELD COMMENTS:			
LAB COMMENTS:			

COMPONENT	MOLE %	MASS %	GPM @ 14.65	GPM @ 14.73
ALCOHOLS	0.0002	0.0007	0.0000	0.0000
HELIUM	0.00	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.08	0.12	---	---
CARBON DIOXIDE	3.78	8.60	---	---
METHANE	87.2590	72.3527	---	---
ETHANE	5.4972	8.5434	1.4652	1.4732
PROPANE	1.6854	3.8412	0.4628	0.4653
I-BUTANE	0.3951	1.1869	0.1289	0.1296
N-BUTANE	0.3561	1.0697	0.1119	0.1126
I-PENTANE	0.1808	0.6735	0.0660	0.0663
N-PENTANE	0.1220	0.4549	0.0440	0.0442
HEXANES PLUS	0.6441	3.1576	0.2590	0.2599
TOTALS	100.00000	100.00000	2.5378	2.5511

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0230	0.0929
TOLUENE	0.0565	0.2691
ETHYLBENZENE	0.0012	0.0066
XYLENES	0.0092	0.0505
TOTAL BTEX	0.0899	0.4191

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

***(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)*

CALCULATED VALUES**

	BTU @	14.65	14.73
LHV	NET DRY REAL :	984.4 **/scf**	989.8 **/scf**
	NET WET REAL :	967.2 **/scf**	972.6 **/scf**
HHV	GROSS DRY REAL :	1088.8 **/scf**	1094.8 **/scf**
	GROSS WET REAL :	1069.8 **/scf**	1075.8 **/scf**
	NET HEATING VALUE (60 °F ideal reaction):		19343.0 **Btu/lbm**
	GROSS HEATING VALUE (60°F ideal reaction):		21394.2 **Btu/lbm**
	RELATIVE DENSITY (AIR=1):		0.6673
	DENSITY		0.05098 **lbm/scf**
	COMPRESSIBILITY FACTOR :		0.9974
	REGULAR WOBBE INDEX		1333.6

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EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	202507027	ANALYSIS NO. :	01
COMPANY NAME :	QB ENERGY OPERATING, LLC	ANALYSIS DATE:	JULY 11, 2025 14:38
ACCOUNT NO. :		SAMPLE DATE :	JULY 1, 2025
PRODUCER :	QB ENERGY OPERATING, LLC	CYLINDER NO. :	ECA-807
LEASE NO. :		SAMPLED BY :	NICK CROY
NAME/DESCRIP :	PICEANCE CREEK UNIT T87X-3G5 PRODUCTION CASING		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	1260	AMBIENT TEMP.:	
H2S BY STAIN TUBE:	_ *ppm mol*		
COMMENTS :			

Componet	Mole %	Wt %
Helium	0.00	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	3.78	8.60
Nitrogen	0.08	0.12
Methane	87.2590	72.3527
Ethane	5.4972	8.5434
Propane	1.6854	3.8412
Isobutane	0.3951	1.1869
n-Butane	0.3561	1.0697
Isopentane	0.1743	0.6499
n-Pentane	0.1220	0.4549
Cyclopentane	0.0065	0.0236
n-Hexane	0.0686	0.3056
Cyclohexane	0.0405	0.1762
Other Hexanes	0.1339	0.5928
Heptanes	0.1289	0.6645
Methylcyclohexane	0.0948	0.4811
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0230	0.0929
Toluene	0.0565	0.2691
Ethylbenzene	0.0012	0.0066
Xylenes	0.0092	0.0505
C8+ Heavies	0.0875	0.5183
Subtotal	99.99980	99.99930
Oxygen/Argon	0.00	0.00
Alcohols	0.0002	0.0007
Total	100.00000	100.00000

Calculated Values BTU @ **14.65**		**Total Sample**	**C6+ Fraction**	**C8+ Fraction**	**C10+ Fraction**	
LHV	Net Dry Real:	984.4	4754.4	5690.1	10982.3	**Btu/scf**
	Net Wet Real:	967.2	4671.3	5590.6	10790.3	**Btu/scf**
HHV	Gross Dry Real:	1088.8	5102.7	6119.5	11811.2	**Btu/scf**
	Gross Wet Real:	1069.8	5013.5	6012.5	11604.7	**Btu/scf**
Other Calculated Values						
Regualr Wobbe Index*		1333.6	2809.2	3089.2	4304.5	**Btu/scf**
Net Heating Value (60 °F ideal reaction):		19343.0	19194.4	19779.3	21277.7	**Btu/lbm**
Gross Heating Value (60°F ideal reaction):		21394.2	20601.6	21272.2	22882.8	**Btu/lbm**
Molar Mass (MW):		19.34673	94.856	113.714	219.433	**g/mol**
Relative Density (AIR=1):		0.6673	3.2752	3.9260	7.5764	**SG**
Density:		0.05098	0.24996	0.29965	0.57824	**lbm/scf**
Compressiblity Factor:		0.9974	0.9932	0.9971	1.0000	**Z**
Liquid Volume real gas @:	**14.65**	17.8898	0.2582	0.0439	0	**gal/1000 scf**

**** The Wobbe pressure base in the number considered is based upon the given Pb of the HHV above.***

#DIV/0 or 0 (zero) will appear in the Calculated Value Section when there is no C6+, C8+ or C10+ in the sample to calculate these factors.

BDL - Below Detection Limit. The H2S LOS has a detection limit of 0.25 ppm. A _ (an uderscore) indicates there was no tube pulled for H2S.

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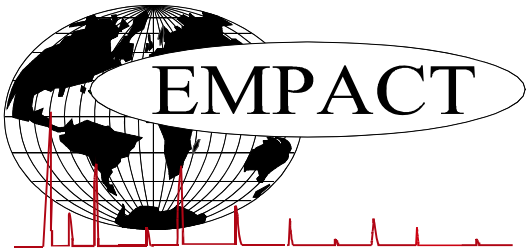

EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PRIMARY DB KEY: **05-103-10719** NAME/DESCRIP : **PICEANCE CREEK UNIT T87X-3G5**
LEASE #: **PRODUCTION CASING**
FIELD/AREA:

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OFFICE / BRANCH: PARACHUTE, CO SAMPLE DATE : JULY 1, 2025
CUSTOMER REF: TO:
PRODUCER : QB ENERGY OPERATING, LLC EFFECTIVE DATE:
FIELD DATA
SAMPLE CYCLE: SAMPLE TYPE:
SAMPLE PRES. : 1260 psig PROBE :
FLOW PRES. : psig CYLINDER NO. : ECA-807
LAB PRES: psig SAMPLED BY : NICK CROY
SAMPLE TEMP. : ºf SAMPLING COMPANY: QB ENERGY OPERATING, LLC
AMBIENT TEMP.: ºf H2S BY STAIN TUBE: _ ppm mol
H2O BY STAIN TUBE: - #/mmcf CO2 BY STAIN TUBE: - Mol %
FIELD COMMENTS:
LAB COMMENTS:

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ **14.65**	GPM @ **14.73**
Acetone	X3	0.0001	0.0003	0.000	0.000
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,4-Dimethylhexane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
1c,2c,4-Trimethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1c,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1t,3-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0001	0.0006	0.000	0.000
2,2,3,4-Tetramethylpentane	I9	0.0001	0.0007	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
4,4-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
2,6-Dimethylheptane	I9	0.0001	0.0007	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0001	0.0007	0.000	0.000
2-Methyloctane	I9	0.0001	0.0007	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0007	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0002	0.0012	0.000	0.000
3-Methyl-3-ethylpentane	I8	0.0002	0.0012	0.000	0.000
3-Ethylhexane	I8	0.0002	0.0012	0.000	0.000
UnknownC18s	U18	0.0001	0.0013	0.000	0.000
2,2,5-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,4-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
3,3-Dimethylheptane	I9	0.0002	0.0013	0.000	0.000

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UnknownC9s	U9	0.0002	0.0013	0.000	0.000
3,4-Dimethylhexane	I8	0.0003	0.0018	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0004	0.0023	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0004	0.0023	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0005	0.0027	0.000	0.000
3c-Ethylmethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
n-Propylcyclopentane	N8	0.0005	0.0029	0.000	0.000
1c,2-Dimethylcyclopentane	N7	0.0006	0.0030	0.000	0.000
2,2-Dimethylheptane	I9	0.0006	0.0040	0.000	0.000
2,2,3-Trimethylhexane	I9	0.0006	0.0040	0.000	0.000
3,3-Dimethylhexane	I8	0.0007	0.0041	0.000	0.000
2,5-Dimethylheptane	I9	0.0007	0.0046	0.000	0.000
2,2,3-Trimethylbutane	I7	0.0009	0.0046	0.000	0.000
3-Ethylpentane	I7	0.0010	0.0052	0.000	0.000
Ethylbenzene	I8	0.0012	0.0066	0.000	0.000
3,3-Dimethylpentane	I7	0.0014	0.0072	0.001	0.001
Ethylcyclohexane	N8	0.0013	0.0075	0.001	0.001
1c,2t,4-Trimethylcyclopentane	N8	0.0018	0.0104	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0018	0.0104	0.001	0.001
2,3-Dimethylhexane	I8	0.0019	0.0112	0.001	0.001
1,1,4-Trimethylcyclohexane	N9	0.0018	0.0117	0.001	0.001
2,2-Dimethylpentane	I7	0.0024	0.0124	0.001	0.001
2,2,3-Trimethylpentane	I8	0.0022	0.0130	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0024	0.0132	0.001	0.001
2,2-Dimethylhexane	I8	0.0023	0.0136	0.001	0.001
2,5-Dimethylhexane	I8	0.0023	0.0136	0.001	0.001
1c,4-Dimethylcyclohexane	N8	0.0025	0.0145	0.001	0.001
Ethylcyclopentane	N7	0.0030	0.0152	0.001	0.001
2,2-Dimethylpropane	I5	0.0043	0.0160	0.002	0.002
4-Methylheptane	I8	0.0030	0.0177	0.002	0.002
2,4-Dimethylpentane	I7	0.0039	0.0202	0.002	0.002
1,1-Dimethylcyclopentane	N7	0.0042	0.0213	0.002	0.002
1t,2-Dimethylcyclohexane	N8	0.0038	0.0220	0.002	0.002
Cyclopentane	N5	0.0065	0.0236	0.002	0.002
2,3-Dimethylpentane	I7	0.0049	0.0254	0.002	0.002
1t,3-Dimethylcyclopentane	N7	0.0061	0.0310	0.003	0.003
2,2-Dimethylbutane	I6	0.0069	0.0307	0.003	0.003
1t,4-Dimethylcyclohexane	N8	0.0058	0.0336	0.003	0.003
1c,3-Dimethylcyclopentane	N7	0.0066	0.0335	0.003	0.003
1,3-Dimethylbenzene (m-Xylene)	A8	0.0063	0.0346	0.002	0.002
3-Methylheptane	I8	0.0072	0.0425	0.004	0.004
1t,2-Dimethylcyclopentane	N7	0.0096	0.0487	0.004	0.004
2,3-Dimethylbutane	I6	0.0124	0.0552	0.005	0.005
2-Methylheptane	I8	0.0100	0.0590	0.005	0.005
1c,2t,3-Trimethylcyclopentane	N8	0.0134	0.0777	0.007	0.007
3-Methylhexane	I7	0.0179	0.0927	0.008	0.008
Benzene	A6	0.0230	0.0929	0.006	0.006
2-Methylhexane	I7	0.0196	0.1015	0.009	0.009
n-Octane	P8	0.0179	0.1057	0.009	0.009
3-Methylpentane	I6	0.0295	0.1314	0.012	0.012
Methylcyclopentane	N6	0.0335	0.1457	0.012	0.012
Nitrogen	---	0.08	0.12	---	---
Cyclohexane	N6	0.0405	0.1762	0.014	0.014
2-Methylpentane	I6	0.0516	0.2298	0.021	0.021
n-Heptane	P7	0.0464	0.2403	0.021	0.021
Toluene	A7	0.0565	0.2691	0.019	0.019
n-Hexane	P6	0.0686	0.3056	0.028	0.028
Methylcyclohexane	N7	0.0948	0.4811	0.038	0.038
n-Pentane	P5	0.1220	0.4549	0.044	0.044
i-Pentane	I5	0.1700	0.6339	0.062	0.062

n-Butane	P4	0.3561	1.0697	0.112	0.113
i-Butane	I4	0.3951	1.1869	0.129	0.130
Propane	P3	1.6854	3.8412	0.463	0.465
Carbon Dioxide	---	3.78	8.60	---	---
Ethane	P2	5.4972	8.5434	1.465	1.473
Methane	P1	87.2590	72.3527	---	---
TOTAL		100.00000	100.00000	2.5378	2.5511

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0230	0.0929
TOLUENE	0.0565	0.2691
ETHYLBENZENE	0.0012	0.0066
XYLENES	0.0092	0.0505
TOTAL BTEX	0.0899	0.4191

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993)*
Mod ASTM D6730,GPA 2261 & GPA 2286.

***(CALC: GPA 2172, GPA 2145 & TP-17 @14.696 & 60 F)*

CALCULATED VALUES**

BTU @		14.65	14.73
LHV	NET DRY REAL :	984.4 /scf	989.8 /scf
	NET WET REAL :	967.2 /scf	972.6 /scf
HHV	GROSS DRY REAL :	1088.8 /scf	1094.8 /scf
	GROSS WET REAL :	1069.8 /scf	1075.8 /scf
	NET HEATING VALUE (60 °F ideal reaction):		19343.0 Btu/lbm
	GROSS HEATING VALUE (60°F ideal reaction):		21394.2 Btu/lbm
	RELATIVE DENSITY (AIR=1):		0.6673
	DENSITY		0.05098 lb/scf
	COMPRESSIBILITY FACTOR :		0.9974
	REGULAR WOBBE INDEX		1333.6

C6+ Fraction of DHA Gas Analysis @60°F, 14.696 psia

Net Dry Ideal BTU	4737 /scf	Relative Density - SG (Air=1)	3.2752	***C6+factors***
Gross Dry Ideal BTU	5084 /scf	**Z** Compressiblity Factor	0.99322	0.99254
Net Dry Ideal BTU	19194.4 /lb	Density Factor	249.96 lbm/1000 ft3	
Gross Dry Ideal BTU	20601.6 /lb	Molar Mass or MW	94.856 g/mol	
		Volume Liquid Ideal gas	0.259 scf/gal	24.7

This hexanes plus fraction may be applied in place of published C6+ factors. The Z & GPM need additional calc for C6+ factors.
#DIV/0 or 0 (zero) will appear in this section when there is no hexanes plus in the sample to calculate C6+ factors.

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